R E P O R T R E S U M E S

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CURRENT AND RECENT RESEARCH--1967.

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ILLINOIS UNIV., URBANA, INST.RES.EXCEPT.CHILDREN

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CURRENT AND RECENT RESEARCH PROGRAMS AT THE INSTITUTE FOR RESEARCH ON EXCEPTIONAL CHILDREN IN URBANA, ILLINOIS, ARE REVIEWED. EACH OF THE PROGRAMS FOCUSES UPON THE SOCIAL, MENTAL, AND PHYSICAL CHARACTERISTICS DIFFERENTIATING THE EXCEPTIONAL CHILD FROM THE NORMAL CHILD. THE RANGE OF THE PROBLEMS COVERED IS FURTHER IDENTIFIED AS (1) INTERPERSONAL ASSOCIATIONS AND BEHAVIOR AND (2) INTRAPERSONAL AND PHYSIOLOGICAL FUNCTIONING. INCLUDED IN THE DOCUMENT ARE AN EXPLANATORY INTRODUCTION AND AN ACKNOWLEDGMENT OF MULTIPLE INFLUENCES WHICH LISTS THE LOCATION OF RESEARCH FACILITIES, THE NAMES OF THE STAFF, AND THE SOURCES OF FINANCIAL SUPPORT. FORTY-FOUR CURRENT AND RECENT RESEARCH PROGRAMS OF THE INSTITUTE ARE FIRST LISTED BY TITLE WITHIN THE AREAS OF THE CULTURAL DIFFERENCE, DEAFNESS, EMOTIONAL DISTURBANCE, GIFTEDNESS, LEARNING DISABILITY, MENTAL RETARDATION, AND RELATED CHILD DEVELOPMENT RESEARCH. EACH RESEARCH PROGRAM IS DESCRIBED BY AN ABSTRACT WHICH PROVIDES TITLE, INVESTIGATOR, SOURCE OF SUPPORT, PROBLEM INVESTIGATED, PROCEDURE FOLLOWED, AND RESULTS OBTAINED. IN ADDITION, 61 DOCTORAL DISSERTATIONS SUPPORTED BY THE INSTITUTE, BOTH COMPLETED AND IN PROGRESS, ARE LISTED WITH TITLE, AUTHOR, AND DATE FOR THE YEARS 1950 TO 1967. (JD)

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CURRENT AND RECENT RESEARCH: 1967

Reported by

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INSTITUTE FOR RESEARCH ON EXCEPTIONAL CHILDREN
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APR 29 1968

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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INTRODUCTION

In March, 1964, the monograph 10 Years of Research at the Institute for Research on Exceptional Children was released. This monograph was a tribute to the work of the research team from 1952-1962. It was also a contribution to the understanding of the effectiveness of interdisciplinary, programmatic research which is designed to solve difficult problems. The attached research abstracts were compiled to indicate the continued interests and progress of the staff at the Institute.

The focus of these current and recent research programs is upon the characteristics---social, mental, and physical---which differentiate the exceptional child from the normal child. Some investigators focus their study upon a systematic definition of these characteristics and propose means to dispose of the resulting problems; others focus their efforts upon the effective and efficient implementation and modification of these proposed dispositions. All of the investigators systematically evaluate their projects in terms of assisting the exceptional child to live a more self-sufficient and useful life.

The range of these research projects includes problems concerned with (1) interpersonal associations and behavior, and (2) intrapersonal and physiological functioning. Some investigative teams have entered into extensive and intensive evaluations of community effects upon the education of children; others have explored the (extensive and intensive) construction of instruments and development of methods for assessing and changing disabling characteristics. All investigators share the common goal of systematically understanding the development of the deviant child.

Many of the abstracts contained in this manuscript were originally compiled by the senior editor in his final report as Director of the Institute. Additional abstracts were compiled to bring that report up-to-date, and to provide a review of the activities at the Institute up to the end of the calendar year 1967.

S.A.K.

W.P.H.

R.A.H.

R.W.H.

ACKNOWLEDGMENT OF MULTIPLE INFLUENCES

It is difficult to acknowledge all those who have contributed to the current and recent research programs of the Institute. This difficult task is influenced (1) by the housing arrangements which were made for these projects, (2) by the interaction of the investigators with other staff members and graduate students of the Institute, and (3) by the various sources of financial support for these projects.

The current Institute staff is housed in six (6) different buildings on the University of Illinois Urbana campus. In addition to these campus facilities, IREC investigators utilize schools, institutions and hospitals in numerous states as sources for research data. All six of these campus buildings also house activities other than the research conducted by the Institute members. Some of the research activities in these buildings are conducted in cooperation with other research organizations. Some activities are conducted independently in the same facility. The independent investigator in these buildings then has the advantage of being exposed to colleagues with interests different than he is pursuing.

As of December, 1967, there were 28 Faculty, 24 Staff Research Associates and Specialists, 47 Research and Teaching Assistants, 56 Fellows and other graduate students, and 22 secretaries in the Institute and the Department of Special Education. The discussions between those in the Institute are numerous. In addition, Institute personnel exchange ideas with members of other organizations where Institute activities are conducted.

The following information includes those places and persons making up the setting in which the IREC projects are conducted. Below are listed (a) the locations of the research projects, (b) the full-time staff of the Institute as of December, 1967, (c) the full-time graduate fellows, (d) researchers who are listed in this report, but are not now on appointment to the Institute, and (e) the organizations which contributed to the financial support of the research projects.

LOCATIONS OF RESEARCH FACILITIES

1. University of Illinois facilities:

   Children's Research Center

   College of Education

   Col. Wolfe School

   Commerce Annex

   Special Education Laboratory: 1005 W. Nevada, Urbana, Illinois

   Special Education Annex: 907 W. Nevada, Urbana, Illinois

2. Cooperating state agencies such as:

   Adler Zone Center, Champaign, Illinois

   Champaign City Schools, Champaign, Illinois

   Instructional Materials Center (for exceptional children), Urbana, Illinois

   Lincoln State School, Lincoln, Illinois

   Urbana City Schools, Urbana, Illinois

STAFF OF THE INSTITUTE

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The following list includes the current affiliation of researchers who are listed in this report, but are not now on appointment to this Institute:

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Hurley, Oliver	Yeshiva University
Karara, Houssam M.	Civil Engineering, University of Illinois
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SOURCES OF FINANCIAL SUPPORT FOR RESEARCH

Carnegie Foundation

Children's Research Center

Department of Special Education

Illinois State Department of Mental Health

Institute for Research on Exceptional Children

Joseph P. Kennedy, Jr. Foundation

National Institute of Child Health and Human Development

National Institute of Mental Health

National Institute of Neurological Diseases and Blindness

Psychiatric Training and Research Authority, Department of Mental Health

Regents of the University of Colorado

United States Office of Education

United States Public Health Service

University of Illinois Press

Vocational Rehabilitation Agency

RESEARCH PROGRAMS OF THE INSTITUTE

The research programs of the Institute for Research on Exceptional Children are outlined by (a) listing the titles of the research programs, (b) giving brief abstracts of current and recent research, (c) doctoral dissertations completed, and (d) doctoral dissertations in progress.

The programs are grouped by the exceptionalities which are being investigated. Within each exceptionality, the research program most directly related to educational planning by a teacher come first; those least directly related to classroom planning are placed later.

Research Program Titles and Investigators

The various research projects conducted by the staff members are listed below, together with the name of the principal investigators.

I.	**Culturally Different**	
	A. Acceleration of Intellectual Development in Early Childhood	Carl Bereiter
	B. A Pilot Dual-Kindergarten Program	Ernest Washington and Jean Osborn
	C. Research Program on Disadvantaged Children	Merle Karnes, Carl Bereiter, Bernard Farber, Michael Lewis and Samuel A. Kirk
	1. Comparison of Different School Intervention Programs	Merle Karnes, and Carl Bereiter
	2. Pilot Study Evaluating Efficacy of Approach for Working with Parents of Disadvantaged Children	Merle Karnes
	3. The Effects of Intervention with Three-Year-Old Disadvantaged Children	Merle Karnes
	4. A Training Program for Mothers of Culturally Disadvantaged Infants: Ages Twelve to Eighteen Months	Merle Karnes

5.	Development of a Program of Sensori-Motor, Verbal, and Motor Integration with Eight Month to Two-Year-Old Disadvantaged Children in the Home	Samuel A. Kirk and Genevieve Painter
6.	The Use of Direct Verbal Instruction in the Development of Academic Aptitude	Carl Bereiter and Siegfried Engelmann
7.	Development of Curricula and Methods in a Workshop Preschool Setting	Carl Bereiter and Siegfried Engelmann
8.	Kinship Patterns and Age-Grading Among Families at Low Socioeconomic Levels	Bernard Farber
9.	The Lower-Class Community as an Influence Upon Intellectual and Educational Achievement	Bernard Farber, Michael Lewis and David Harvey
10.	Problems of Competence Development Among Lower-Class Negroes in a Midwestern City	Michael Lewis

II. Deaf

A.	Behavioral Aspects of Deafness	Stephen P. Quigley
1.	Development of Language and Communication Skills of Deaf Persons	
2.	Investigation of Factors Influencing the Occupational Status of Deaf Persons	
3.	Utilization of Existing Educational, Vocational, and Rehabilitation Facilities by Deaf Persons	
B.	A Descriptive Investigation of Supervision of Teachers of the Deaf	Philip Schmitt

III. Emotionally Disturbed and Conduct Disorder

A.	The Effect of Whispering in Classrooms of Conduct Problem Disturbed Children	John P. Glavin
B.	"Spontaneous" Improvement in Emotionally Disturbed Children	John P. Glavin
C.	An Experimental Analysis of Self Control	Warren M. Steinman
D.	Kinship Systems and Emotional Disturbance in Children	Bernard Farber

IV.	**Gifted**	
	A. A Study of How A Child Learns Concepts About Characteristics of Liquid Materials	Siegfried Engelmann and James J. Gallagher
	B. Development of Techniques to Analyze Teacher Strategy and Resulting Student Performance	James J. Gallagher
	C. Teacher Variation in Concept Presentation in BSCS Curriculum Program	James J. Gallagher
V.	**Learning Disabilities**	
	A. The Revision of the Illinois Test of Psycholinguistic Abilities	Samuel A. Kirk and Winifred D. Kirk
	B. Learning Disabilities Research Project	Alexander Bannatyne
	C. Children's Knowledge of Constraints Upon Order of Attributes in English	Margaret Scheffelin
	D. Children's Sound-Blending as a Function of Number of Divisions and Temporal Intervals	Margaret Scheffelin and Thomas Schriner
	E. Research on Diagnosis and Remediation of Minimal Brain Dysfunction Children	James C. Chalfant
	F. Inter-Rater Reliability on a Check-List for Examiner Competence	Margaret Scheffelin and Janis Wetherall
VI.	**Mental Retardation**	
	A. The Training of Psycholinguistic Functions with the Mentally Retarded	Douglas Wiseman
	B. A School Program for Young Mongoloid Children: A Curriculum Development Project	James C. Chalfant
	C. A Study of the Effects of Two Experimental Curriculum Units on the Social Perception and Occupational Readiness of Educable Mentally Retarded Adolescents	Gary M. Clark
	D. Parental Teaching of the Educable Mentally Retarded Child as Related to School Achievement	Dorothea Rau and Bernard Farber
	E. Linguistic Analysis of Verbal Interaction in Special Classes for the Mentally Retarded	Oliver L. Hurley

F.	Comparison of Four Stimulus - Response Channels in Paired-Associate Learning with Trainable Retarded Children	Margaret Scheffelin
G.	Short-Term Memory in Retarded Children	Keith G. Scott
H.	Reinforcing Properties of Predictive Information	Warren M. Steinman
I.	Factor Analysis of the Experimental Form of the Test of Social Inference	Gary M. Clark and John Paraskevopoulos
J.	Development of a Test of Motor Impairment for Mentally Retarded Children	Alan Balter
K.	Objective Measurement of External Bodily Features	Robert E. Herron and H. Karara
L.	Phenylketonuria in School Aged Retarded Children	Robert Henderson, Malcolm Williamson and Richard Koch

VII. Related Child Development Research

A.	Bio-Behavioral Studies of Children's Play	Robert E. Herron
B.	Analysis of Children's Activity Patterns	Robert E. Herron and William Hurder
C.	Development of Effective, Durable, and Situationally Independent Conditioned Reinforcers	Warren M. Steinman

Research Program Abstracts

The various research projects conducted by the staff members are abstracted below. These abstracts contain statements regarding (a) the title, (b) the investigator, (c) source of support, (d) problem investigated, (e) procedure followed, and (f) results obtained.

CULTURALLY DIFFERENT

A. ACCELERATION OF INTELLECTUAL DEVELOPMENT IN EARLY CHILDHOOD.

Carl Bereiter
Supported by U. S. Office of Education

Problem. Eight procedures were used to explore various approaches to early education. The object of these procedures was to identify directions for innovative development in reading, creativity, and logical operations.

Procedure 1. Teaching Reading to Two- and Three-Year-Olds: This study compares two approaches to teaching reading to children. Five two-year-olds received instruction by playing at liberty with teaching machines, and five three-year-olds received instruction through social games. The experimental edition of the ITPA was administered before and after the five months' instruction period.

Results 1. No child in either group learned to read. On the ITPA, there were no gains in language-related activities. The verbal nature of the games and the non-verbal nature of the machines were, however, reflected in the verbal and non-verbal scores. This study questions the assumption that young children can learn only through play-like activities.

Procedure 2. The Effect of Free-Time Use of START Teaching Machine on Reading Ability in Kindergarten: This study compared seven kindergarten classes in which a teaching machine was placed for free-time use and seven matching control classes which had no machine. The machine presented stories both auditorily and visually requiring the child to make choices between printed words.

Results 2. On a recognition test consisting of words used in these choice frames, every experimental class did better than its matched control class. This indicates that learning may occur with minimal direct, interpersonal intervention.

Procedure 3. Children's Preference for High Versus Low Frequency Words: Do children prefer words that occur frequently in their own speech or words occurring less frequently? The study used a paired-comparison method. Twenty kindergarten children were each given randomly balanced pairs of words and asked to choose the word they wanted to have.

Results 3. For both nouns and adjectives, children chose more high than low frequency words. This study supports the practice of using high-frequency words for beginning readers.

Procedure 4. Four Approaches to Construction Activities in the Nursery School and Their Relations to Creative Problem-Solving: This study compared the effects of four approaches on children's ability to solve construction problems independently: (1) Independent Construction, (2) Guided Construction, (3) Independent Problem-Solving, and (4) Guided Problem-Solving. Each group of nursery school children were given six half-hour sessions with construction materials. The children were then assigned three construction tasks to be carried out independently. The products were given blind ratings on the degree to which the product fulfilled the task.

Results 4. Only one factor showed any significant effect: guidance over independence. Guided problem-solving which was expected to have a greater transfer value to the test situation, produced no better results than Guided Construction, which is popularly believed to discourage creativity.

Procedure 5. Teaching Conservation of Substance: The purpose of this study was to experimentally induce the concept of conservation. Twenty-five non-conserving subjects received training in the conservation of inequalities of liquid in a situation where the child had to apply the principle of reversibility. Twenty-six control subjects received a placebo treatment.

Results 5. Twelve of the experimental subjects and one of the control subjects were able to conserve. The study indicates that training can be influential in accelerating conservation.

Procedure 6. Teaching Formal Operations to Culturally Advantaged and Disadvantaged Preschool Children: Five culturally deprived and five privileged preschool children were taught the rules for handling a class of logically similar "formal operations"---the hypothesis being that although these children were not yet at the concrete operational state, they could learn to solve problems that required the use of abstract reasoning. After training, the subjects were tested on the ability to conserve liquid quantity.

Results 6. Four out of five culturally advantaged and three out of five culturally deprived children passed the criterion problem. Of these, only one passed the conservation test. This experiment questions the generalizability of Piaget's conclusions about developmental progression from pre-operational to concrete operational to formal operational modes of thought.

Procedure 7. An Academically-Oriented Preschool for Culturally Deprived Children: This study attempted to (1) determine the effects of a preschool program of direct verbal instruction in oral language, reading and arithmetic on language test performance and on achievement, and (2) to determine the program's potential for eliminating learning deficits. In Fall, 1964, 15 disadvantaged four-year-olds were placed in three groups. Classes were held

for two hours a day: one hour for direct verbal instruction in language, arithmetic, and reading; the remainder for less structured activities designed to reinforce the effects of instruction. Pretest scores were obtained on the Stanford-Binet and on the ITPA. Posttests, after seven months of instruction, included scores on an additional test---The Wide Range Achievement Test.

Results 7. In the Spring, 1965, the children had made a mean IQ gain of 10 points, from 95 to 105. Before preschool, the children averaged from one-half to one and one-half years below average on all language tests. After preschool, they were at the first grade level in reading, second grade level in arithmetic, and their grammar use rose from far below average to average.

Procedure 8. Direct Verbal Instruction Contrasted with Montessori Methods in the Beaching of Normal Four-Year-Old Children: This study compared the method of direct verbal instruction with the Montessori methods of preschool education to determine whether contrasting verbal and nonverbal emphasis would be reflected in verbal and nonverbal performance and achievement. Seventeen Montessori children (CA 3-10 to 4-10), largely from upper middle-class homes received instruction three hours a day. The Academic Preschool (direct verbal instruction) consisted of 18 four-year-old children from families interested in but unable to send their children to the Montessori school. The school day was two hours long. Pretest and posttest scores were obtained on the ITPA and on the Wide-Range Achievement Test.

Results 8. Groups did not differ significantly in either overall level of test performance or in particular subtests of the ITPA. In achievement, the Academic Preschool children were significantly superior to the Montessori group in all three areas. The mean grade-level scores for the Academic Preschool and the Montessori group, respectively, were 1.46 and 1.19 on arithmetic; 3.43 and 1.01 on reading; and 1.72 and 1.25 on spelling.

B. A PILOT DUAL-KINDERGARTEN PROGRAM

Ernest Washington and Jean Osborn
Supported by Carnegie Foundation

Problem B. This study is being conducted in cooperation with the Champaign Public Schools and it explores the feasability of a dual kindergarten program in the public schools. Children attend an academic kindergarten for one-half day and a traditional kindergarten for one-half day. The academic kindergarten provides the children with an opportunity to acquire the skills necessary for success in first grade, the traditional kindergarten provides the opportunity for integrated, social and cultural enrichment.

Procedure B. Ten children matched on mental age scores with a control group attend a traditional and an academic kindergarten while ten children in a control group attend only a traditional program.

Results B. Study in progress.

C. RESEARCH PROGRAM ON DISADVANTAGED CHILDREN

Merle Karnes, Carl Bereiter, Bernard Farber, Michael Lewis
and Samuel A. Kirk
Supported by U. S. Office of Education

In 1965-66 the Institute obtained funds to launch an extensive programmed research project on disadvantaged preschool children. Four questions drawn from different dimensions of the problem were used as the basis for this longitudinal program:

1. At what age is intervention most effective?
2. What kinds of school interventions are most effective?
3. How long should specialized intervention be continued?
4. What are the effects of social variables in kinship patterns and lower-class communities on intellectual and educational development?

The following reported projects are all related to the four basic dimensions listed above.

1. Comparison of Different School Intervention Programs

Merle Karnes and Carl Bereiter
Supported by U. S. Office of Education

Problem 1a. The effects of various forms of school intervention programs upon IQ scores were investigated.

Procedure 1a. Five different groups of disadvantaged children were assigned to five different programs for one year. Each group contained 15 children. The programs are reported later in greater detail. They included:

1. Direct Verbal Instruction.
2. Amelioration of Learning Deficits (Structured).
3. Traditional Nursery School.
4. Assignment to Montessori School.
5. Assignment to Different Classes in Community (Integrated).

Results 1a. Each form of school intervention produced gains in IQ. However, the two specialized language development programs produced substantially greater gains than were obtained in the traditional, Montessori or community integrated programs.

Table 1.

Comparison of SB IQ's For First Year (Four-Year-Olds)

	Pretest	First Yr. Test	Gain
Direct Verbal Instruction	95	112.0	17
Amelioration of Learning Deficits	96	110	14
Traditional Nursery School	95	103	8
Assignment to Montessori School	95	100	5
Community Integrated	93	98	5

Problem 1b. The effects of the length of the intervention program upon IQ scores were investigated.

Procedure 1b. The children in the three intervention programs which obtained the most IQ score gain were observed after the second year of programs were completed.

1. The Direct Verbal Instruction group continued in the preschool at Colonel Wolfe School under the same system of instruction.

2. The Amelioration of Deficit group was placed in a public school kindergarten, and received one hour a day of additional instruction in the afternoon as a supporting program.

3. The Traditional Group were assigned to the regular public school kindergarten without supporting help.

Results 1b. The effects upon IQ scores after the second year of the intervention programs included:

1. The Direct Verbal Instruction group who received a second year of specialized instruction in the same situation as the first year, gained another 8 IQ points. The mean for the group was 120.8 IQ.

2. The Amelioration of Deficits group assigned to the public school kindergarten with one hour supporting half a day lost 1.7 IQ points from their previous mean score.

3. The traditional group who were assigned to the public school kindergarten lost 3 IQ points from their mean score.

Table 2.

Mean Stanford-Binet IQ Scores of Three Intervention Groups

	First Year Mean Score	Second Year Mean Score	Gain or Loss of Mean Score
Direct Verbal (continued in program for second year)	112	120.4	+ 8.4
Amelioration of Deficits (public school kindergarten and supporting help)	110.3	108.6	- 1.7
Traditional Program (public school kindergarten)	102.6	99.6	- 3.0

2. Pilot Study Evaluating Efficacy of An Approach for Working With Parents of Disadvantaged Children

Merle Karnes
Supported by U. S. Office of Education

Problem 2a. The effect of parent training groups upon the overcoming of learning deficits in their children was investigated.

Procedure 2a. Fifteen parents (the experimental group) participated in a parent education program. Fifteen parents (the control group) did not participate. The experimental group met with teachers in a two hour session once a week for twelve weeks, and developed instructional materials and methods for parents to use at home in helping the child overcome learning deficits. A test-retest pattern was used with the Stanford-Binet.

Results 2a. The children of the parents in the training program showed a mean gain of 7.5 IQ points. The control group showed a gain of 0 IQ points.

Problem 2b. The relationship between parental involvement in training sessions and non-involvement of their children in the preschool program was investigated.

Procedure 2b. The effectiveness of a structured preschool program which was reinforced with maximal parental involvement was compared with the same program with parents who were minimally involved.

Results 2b. Study in progress through the 1967-8 school year.

3. The Effects of Intervention with Three-Year-Old Disadvantaged Children

Merle Karnes
Supported by U. S. Office of Education

Problem 3. This longitudinal study will investigate whether age three or four is more strategic to change IQ scores and thus influence the beginning of attendance in a highly structured preschool program.

Procedure 3. Fifteen three-year-old disadvantaged children participated in a highly structured training program, followed by a similar program for four-year-olds in the next year, and by a supportive program in kindergarten in the following year. A control group received no training. Periodic Stanford-Binet testing was used as one index of the program influence.

Results 3. Pretest on the Stanford-Binet indicated that the mean IQ for the experimental group was 94, and the mean IQ for the control group was 91. After one school year, the mean IQ of the experimental group was 111.4, and the mean IQ for the control group was 88.5.

4. A Training Program for Mothers of Culturally Disadvantaged Infants: Ages Twelve to Eighteen Months

Merle Karnes
Supported by U. S. Office of Education

Problem 4. This longitudinal study proposes to investigate the effects of training mothers from low socioeconomic status to stimulate the sensori-motor, verbal, and motor integration of their infants, ages twelve to eighteen months.

Procedure 4. Forty disadvantaged infants will be matched and placed in two groups: the experimental group - those whose mothers will receive training, and the control group - those whose mothers receive no training. The experimental program will consist of weekly two hour sessions for the mothers who will be trained to make and use instructional materials to stimulate the development of their child. A pre-posttest pattern will be followed. A series of posttests will be administered one year after training, when the infants are two years old, three years old, and four years old.

Results 4. Study in progress.

5. Development of a Program of Sensori-Motor, Verbal, and Motor Integration with Eight to Two-Year-Old Disadvantaged Children in the Home.

Samuel A. Kirk and Genevieve Painter
Supported by U. S. Office of Education

Problem 5. To investigate whether culturally disadvantaged children, between the ages of eight months and two years, who are provided with a program of intellectual stimulation for one hour a day, five days a week, will reach a level of cognitive development at the age of four years which exceeds that attained by (1) older untutored siblings when they were four years of age, and (2) a randomized control group who did not receive treatment.

Procedure 5. Thirty subjects from eight months to two years were randomly selected from those identified as culturally disadvantaged. An experimental group of 15 subjects received intellectual stimulation for one hour a day, five days a week. This stimulation included tasks involving size discrimination, seriation, relation of concrete objects to pictorial representations, and exploratory manipulation. A control group of 15 subjects received no stimulation. Pretest and posttest scores were obtained. When the subjects are four years old, their test scores will be compared with the older untrained siblings when they were four.

The investigation of the family influence upon cognitive and verbal development will include an assessment of (a) intellectual stimulation provided by the home, (b) the social status of the parent, (c) the degree and type of interrelation between parent and child. In addition, the relation between the family variables on the child's intelligence will be investigated. The relationship between subject's physical size and health and intellectual development will be considered. Frequent analysis of daily rating charts will provide information concerning each subject's progress.

Results 5. During the Spring, 1967, ten experimental and ten control subjects were examined on the ITPA, the Stanford-Binet and the Merrill-Palmer Scales. The results indicated a significant acceleration of development for the ten experimental subjects and no acceleration of development for those who did not receive tutoring.

6. The Use of Direct Verbal Instruction in the Development of Academic Aptitude

Carl Bereiter and Siegfried Engelmann
Supported by U. S. Office of Education

Problem 6. The objectives of this study were (1) to test the effects of continuation of the preschool program for disadvantaged children which concentrates on teaching logical use of language structures in oral language, reading, and arithmetic, and (2) to replicate the experiment with modification in the approach (see Academically-Oriented Preschool for Culturally Deprived Children).

Procedure 6. In the Fall, 1965, 14 disadvantaged children who had participated in the preschool program the year before were placed in continuation classes conducted as a regular kindergarten class in public school and following ordinary school schedules. The class was staffed by three project personnel who continued with procedures used the past year. Materials, however, were at a higher level.

At the same time, the project of the first year began with a new group of four-year-old disadvantaged children. Tests were the same as those used the first year; the program was modified in the reading and language approaches.

Results 6. In the Spring, 1966, the mean IQ gain from the year before was 3 points (from 103 to 106). The group achieved an average level of performance in language learning. They were at the mid-first-grade level in reading, mid-second-grade level in arithmetic, and mid-first-grade level in spelling. Direct instruction of grammar was suspended resulting in a gain of only four months.

At the end of the first year of the modified direct verbal instruction preschool program, (Spring, 1966) the mean IQ gain was 17 points (from 95 to 112). At the end of kindergarten, (second year, Spring, 1967) the mean IQ for the children who received two years of instruction was 121, a two year gain of 24 points.

7. Development of Curricula and Methods in a Workshop Preschool Setting

Carl Bereiter and Siegfried Engelmann
Supported by U. S. Office of Education

Problem 7. This two year program:

a. Systematically looked into problems of early childhood education in a workshop-preschool, (1) reexamining present curricula and methods in the major subject areas, language, arithmetic, and reading, (2) dealing with special educational problems, (3) developing details of curriculum, and (4) elaborating and extending the curriculum.

b. Trained graduate students working as apprentices to implement programs of this kind in the future.

Procedure 7. Twenty (20) four-year-old subjects, ranging from severely disadvantaged to middle class, were placed into homogeneous groups with mean IQ's of roughly 85, 92, 97, and 105. Pretest and posttest data were obtained.

All members of the development team participated in the preschool class as teachers, observers, and evaluators, moving from class to class. A head teacher was responsible for each major subject. During the teaching sessions, project directors communicated with the person teaching. For 20 minutes after each period, the staff discussed problems and suggestions.

Results 7. Fifteen disadvantaged children made a mean IQ gain of 12 points on the Stanford-Binet Test and scored at the lower first-grade level on achievement tests in reading, arithmetic, and spelling. The five middle-class children also made significant IQ gains and scored in the upper first-grade and lower second-grade range on achievement tests.

Eleven graduate students received one or two semesters of training in the classroom and in a graduate seminar devoted to devising a curriculum which will be used in a class of four-year-olds this coming year. A language guide for teachers is being written. Movies were made of all subject areas taught.

8. Kinship Patterns and Age-Grading Among Families at Low Socioeconomic Levels

Bernard Farber
Supported by U. S. Office of Education

Problem 8. The purpose of this study is to examine the patterns of kinship relations among Negro and white families of low socioeconomic levels to determine the relationship among age-grading, kinship relations, and socialization. The study focuses on the timetable for granting adult-like independent activities to children, and the categroies of kinship which are operational in the population.

Procedure 8. The 400 respondents were parents with children; (a) in the experimental and in the control groups of the experimental preschool for the disadvantaged; (b) in neighborhood day care centers; (c) in traditional preschools; and (d) a sample of 100 middle-class families selected as comparison groups to indicate middle-class kinship patterns and child-rearing timetables. The following data were collected during interviews with the parents:

1. Data on independence timetables; and
2. Genealogical material and kinship relationships.

Results 8. Study in progress. The data have been collected and are being processed.

9. The Lower-Class Community as an Influence Upon Intellectual and Educational Achievement

Bernard Farber, Michael Lewis and David Harvey
Supported by U. S. Office of Education

Problem 9. This study proposed to (1) describe and analyze the history and organization of a Caucasian slum; (2) identify the structures and beliefs which may inhibit upward mobility and prevent full participation in the institutions of the larger community; and (3) determine the extent to which the inhibiting structures have their roots in community organization.

This study concentrated on sources of the contravention of a set of deviant subcultural norms and values undermining orientation toward academic achievement and preventing the lower-class individual from patterning his behavior in accordance with middle-class standards. Specifically, (a) the institutional organization centering around the automobile, (b) kinship and friendship relations, and (c) allocation of scarce resources were investigated.

Procedure 9. The study was based on (1) historical documents and records, (2) interviews, (3) participant observation in a local lower-class sub-community, and (4) kinship-pattern data.

Results 9. The original investigative focus was on interpreting community and family life in terms of organizational response to "highly variable occupational and social environments." Study in progress. Final report will be completed in August, 1968.

10. Problems of Competence Development Among Lower-Class Negroes in a Midwestern City.

Michael Lewis
Supported by U. S. Office of Education

Problem 10. The ultimate objective of this study is to diagnose the problem of behavioral incapacity among a segment of disadvantaged Negro Americans.

Procedure 10. Three phases were used in conducting this investigation:

Phase I. Contextual Background: (1965)

This phase included:
1. Historical analysis of Negro community.
2. Participant observation on the quality of day-to-day life within the Negro community.
3. Development of a preliminary model of socialization of competence.

Phase II. The Specification of Competence: (1966)

This phase included interviewing all members, school age or above, of a sample of 30 families to:
1. Systematically look at behavioral inhibitions existing among Negroes, mapping areas of competence default.
2. Isolate areas of performance in which deprived Negro men and women fail to meet current normative expectations for adequacy.
3. Specify the characteristic sources of default.

Phase III. The Organization of Remediation: (1967)

This phase proposes to:
1. Examine how agencies have organized their remedial efforts in serving the Negro community.
2. Examine the degree to which the program prescriptions deviate from actual remedial behavior, and the sources and consequences of this deviation
3. Analyze potential for the reception and adoption of new remedial programs.

The following procedure was used:
1. Conduct open-ended interviews of administrative and functioning personnel in community agencies and of nonprofessional influentials.
2. Observe in typical remedial settings.
3. Profile the functioning of the agencies in terms of their main objectives.
4. Profile nonprofessional community influentials in terms of their inclination to back innovation.

Results 10. Study in progress.

DEAF

A. BEHAVIORAL ASPECTS OF DEAFNESS

Stephen P. Quigley
Supported by the Vocational Rehabilitation Agency

Problem 1. Development of Language and Communication Skills of Deaf Persons. Two studies were initiated to investigate the effects of fingerspelling on the educational, vocational, and communication development of deaf persons.

Procedure 1a. A survey study of the use of fingerspelling in the development of language and communication with deaf children in three residential schools for the deaf: selected groups of children in these three schools are being given a battery of language, communication, and educational achievement tests over a period of five years. Their performance is compared each year with the performance of children in three other residential schools where fingerspelling is not systematically used in the classroom.

Results 1a. Final testing on the project completed in the fall, 1967. Results of the five-year study should be available in the fall, 1968.

Procedure 1b. An Experimental Study of Fingerspelling: In 1964, three experimental classes were established at the Indiana School for the Deaf with each class consisting of eight deaf children from 3-1/2 to 5 years of age. These children were housed and attended classes in a preschool unit and had little contact with older children who used the language of signs. Teachers and dormitory counselors used only fingerspelling and speech with the children. The program, therefore, maximized the children's exposure to English in visual and auditory form. For comparison, the American School for the Deaf educated children orally in an environment similar to that of the experimental classes.

Testing began in Spring, 1967. Data on a battery of tests in speech, lipreading, fingerspelling, reading and written language were collected. At the time of the testing in 1967, the children were 6-1/2 to 8 years of age. Testing will continue for the fifth year in 1968.

Results 1b. Study in progress. Results will be published soon after the data collection in 1968.

Problem 2. Investigation of Factors Influencing the Occupational Status of Deaf Persons. This study investigated the relationship of language and communication ability to the occupational status of the deaf person.

Procedure 2. In each of the main occupational classifications (professional, skilled, unskilled, and unemployed), this study conducted a series of structured, personal interviews with (a) a select sample of deaf adults in the work force, (b) with their immediate supervisors, and (c) with randomly chosen co-workers in similar occupations at the same place of business. This study focused on six major questions:

1. How satisfactory are deaf employees from the supervisors point of view, and how are behavioral factors related to satisfaction and dissatisfaction?
2. What factors differentiate the successful from the unsuccessful deaf person?
3. How do deaf people communicate on-the-job and what role does this play in vocational success?
4. What is the relationship between various educational backgrounds and vocational success?
5. How does the deaf person evaluate his assets, liabilities, and job situation? (Data will include information on the deaf person's objectivity, and self-concept and the reality of his perception.)
6. What are the attitudes of hearing co-workers toward deaf employees: what is the degree of social interaction between them in the job situation; what is the nature of any problems that may characterize work relationships between them?

As of July, 1967, with the cooperation of the State of Illinois and the Survey Research Laboratory (U. of I.), a survey began of students who graduated from or terminated attendance in schools and classes for the hearing impaired between 1957 to 1967. A questionnaire is presently being designed to ascertain the occupational, social, and marital status and adjustment of these persons and how they are related to a number of relevant variables, such as level of communication skills, and type of educational background.

Results 2. Study in progress.

Problem 3. Utilization of Existing Educational, Vocational, and Rehabilitation Facilities by Deaf Persons: Deaf Students in Colleges and Universities. This study had four major objectives:

(1) To locate deaf students who have succeeded in pursuing their education in regular colleges and universities in the United States.
(2) To ascertain the factors related to success.
(3) To investigate problems encountered by deaf students in college and university programs.
(4) To seek information from the respondents as to how the problems might be eliminated by efforts on the part of institutions of higher education and on the part of hearing impaired students.

Procedure 3. Of the 1,000 questionaires sent to hearing impaired students requesting information on family background, hearing loss, communication method, early schooling, college experience, hearing loss, marital status, employment and post-college occupational and social life, 623 were returned and used in this study. Results were presented for five groups of respondents.

Results 3.
(1) Those who had successfully graduated with at least a bachelor's degree from regular institutions of higher education (Group 1), and those graduates of Gallaudet College who had attended graduate school in other institutions (Group 2) were considered highly successful in terms of their academic and professional accomplishment.

(2) Those who had attended such institutions but who terminated prior to acquiring the bachelor's degree (Group 3), and those who had begun study in a regular college or university and later transferred to Gallaudet College (Group 4) received lower grades than groups (1) and (2) in both high school and college. This seems to be the major differentiating factor between those who successfully completed a regular college program and those who did not.

(3) Those who were in attendance at regular colleges and universities at the time of the study (Group 5) tended to make greater use of hearing aids and to have had more home training and encouragement to attend college than was true for the other groups. A follow-up study is planned to ascertain who succeeded and who failed in college.

For those who sought higher education in regular institutions, most of them came from families with socioeconomic backgrounds similar to those of the families of the general college-going population. For most of them, their pre-college schooling was obtained in oral residential schools, and/or day programs which prepared and encouraged the hearing impaired students to enter regular college and university institutions.

B. A DESCRIPTIVE INVESTIGATION OF SUPERVISION OF TEACHERS OF THE DEAF

Philip J. Schmitt
Supported by the Vocational Rehabilitation Administration

Problem. To study the extent of supervision in programs for the deaf in the United States, to study patterns of supervision and types of supervisory personnel in various sizes of day and residential programs; to describe the nature of supervisory positions and educational backgrounds of personnel; to investigate specific supervisory practices.

Procedure. Project initiated 1965. A ten-page questionnaire was devised and sent to 398 persons designed as supervisors by administrators of all U. S. programs with four or more teachers of the deaf. Of the 324 (81%) responses, 258 (65%) were used in the study. Information was coded on IBM cards and submitted, primarily by frequency distribution.

Results. Data collected and analyzed. The final report will be published early in 1968.

EMOTIONALLY DISTURBED AND CONDUCT DISORDER

A. THE EFFECT OF WHISPERING IN CLASSROOMS OF CONDUCT PROBLEM DISTURBED CHILDREN

John P. Glavin
Supported by the Children's Research Center and the Institute for Research on Exceptional Children

Problem A. To investigate whether the establishment of a whispering rule in the classroom alters in a quantitative fashion the types of behavior emitted.

Procedure A. Introduction of whispering rule after an initial structured classroom period of several weeks. Alternate in ten school-day cycles by using whispering or non-whispering in the structured situation. Collection of classroom behavioral da[illegible] throughout all periods.

Results A. Project was initiated in October, 1967 and will terminate in early 1968.

B. "SPONTANEOUS" IMPROVEMENT IN EMOTIONALLY DISTURBED CHILDREN

John P. Glavin
Supported by the Children's Research Center and the Institute for Research on Exceptional Children

Problem B. This study was designed to investigate spontaneous improvement in children who had been identified as emotionally disturbed, but who had not had the help of any special education or psychiatric care. It questioned the basic assumption underlying early detection programs that the majority of childhood problems would continue, or become worse if left untreated.

Procedure B. Emotional disturbance was defined as a score of seven or lower on a 25-point, teacher-peer-self adjustment scale. A survey in 1962 of elementary school children registered in regular classes of second through fifth grades of the public schools of Anderson County, Tennessee, exclusive of Oak Ridge, indicated that there were 12.9 per cent of the children classified as emotionally disturbed by this criterion. The results of the first screening were not made known to anyone. The same children were then screened again in 1966 using the same battery.

Results B. The study revealed persistent disturbances after a four-year interval in 30 per cent of the children initially classified as disturbed who had completed both screenings, and had not received any type of intervention. The results were indicative, but not conclusive, that there was a higher persistence rate of emotional disturbance for girls. The "spontaneous" improvements were attributed partially to a statistical regression effect. Further analysis by subgroups of mentally retarded, speech impaired, grade repeaters and intervention cases revealed that the mentally retarded group scored significantly lower in adjustment on the second screening. Those children who had received some type of therapeutic assistance between screenings scored significantly lower in adjustment on both screenings in comparison to the control group which included the nontreated emotionally disturbed and all other children not identified as having any handicapping condition.

C. AN EXPERIMENTAL ANALYSIS OF SELF-CONTROL

Warren M. Steinman
Supported currently by the Institute for Research on Exceptional Children and the Children's Research Center (a grant proposal is presently being developed and will be submitted to the National Institute of Mental Health).

Problem C. The purpose of the research is to study the development of self-control in young children and to devise methods with which self-control can be taught to children who by reason of age, background, emotional disturbance, or intelligence, have not sufficiently developed such control.

Procedure C1. One set of experiments investigates the relationship between reinforcement delay and amount. These studies are designed to develop a preference for delayed reinforcement even though immediate gratification is available. As such, the studies approach the concept of self-control from its most common everyday and theoretical definition, i.e., delay of gratification.

Procedure C2. The second set of experiments approaches the concept of self-control from a point of view which defines self-control as the individual's personal selection of behavior he will emit and the contingencies under which he will work. In this research the individual is given an opportunity to select the type of work he will perform and the type and amount of reinforcement he will obtain for this work. Variables determining the subject's selection are then manipulated.

Results C. Studies in progress.

D. KINSHIP SYSTEMS AND EMOTIONAL DISTURBANCE IN CHILDREN

Bernard Farber
Supported by the Psychiatric Training and Research Authority, Department of Mental Health

Problem D. The specific aim of the proposed study is to investigate kinship systems of families with an emotionally disturbed child and focus on questions relating to kinship factors in the socialization of children.

Procedure D. Eight families in which a child, between the ages of 8 and 12, was in treatment of an outpatient mental health clinic as an emotionally disturbed child, and eight families whose children were not considered emotionally disturbed were selected. Both groups of children were matched for birth order, sex, socioeconomic status, marital status of the parents, religion, and ethnic background. Each parent was interviewed separately to determine the extent of his own kinship knowledge.

Results D. One of the findings of this study supported the hypothesis that in a bilateral kinship system, asymmetry in relations with the husband's as compared with the wife's siblings and cousins tend to affect socialization of children adversely. The basis for the hypothesis lie in the following assumptions:

(1) In American society there is much solidarity among siblings.

(2) The bilateral system permits variation in the symmetry of kinship relations.

(3) Asymmetry in kinship relations creates a disequilibrium in the balance of power in the husband-wife relationship and creates conflict within the family.

(4) The personal problems created by the disequilibrium may result in emotional disturbances in the child.

GIFTED

A. A STUDY OF HOW A CHILD LEARNS CONCEPTS ABOUT CHARACTERISTICS OF LIQUID MATERIALS

Siegfried Engelmann and James J. Gallagher
Supported by U. S. Office of Education

Problem A. This project explored the Piagetian concept of conservation with regard to the child's concept of the properties of liquids.

Procedure A. Three groups of 15 children each (CA 5-7, an unsophisticated experimental, an unsophisticated control, and the conservers, were given the Conservation Inventory, a series of tasks specifically designed to test the generalization of the conservation-of-liquid principle. The experimental groups was given five special sessions of 15 to 20 minutes each to see if generalizations could be established. The initial test exercises were readministered to all three groups.

Results A.

(1) The results of the retest after the training period show a significant increase in the training group's performance, from an average of five to an average of eight items correct.

(2) The control groups showed consistent performance and no major gains.

Discussion. These findings call into question the validity of Piaget's theory of the child's intellectual development with respect to conservation. According to Piaget, the ability to conserve, to multiply relations, to understand reversibility, and to attend to process rather than to end states, is developmentally timebound and cannot be induced through mere verbal training. Manipulation of actual objects and internalization of actual action are prerequisites to intellectual growth.

The results of this experiment challenge this theory. The children did not formulate rules but were given rules verbally---rules applying to a class of objects, not to concrete experiences. The children did not manipulate actual objects; all representations were on the chalkboard. The children worked on logical process with emphasis on end states. There was no discussion on transfer.

The results indicated that the child's confusion stems from misunderstanding the properties of liquids or from an application of wrong sets of rules, not as much from a cognitive structural factor. In a systematic training program of short duration as applied in this study, educators can introduce mental tasks that require logical thinking without waiting for the child to reach a hypothetical point of conservation mastery.

B. DEVELOPMENT OF TECHNIQUES TO ANALYZE TEACHER STRATEGY AND RESULTING STUDENT PERFORMANCE

James J. Gallagher
Supported by U. S. Office of Education

Problem B. This project seeks to identify and classify critical incidents in teacher-student and student-student classroom interaction in order to analyze various teacher strategies and determine their influence on student productive thinking.

Procedure B.

1. Videotapes made of classroom interaction were collected from 30 teachers instructing demonstration classes of gifted students and were transcribed into tapescripts.

2. A portion of these tapescripts and 50 previously obtained tapescripts were used to develop a Topic Classification System. (This system is briefly described in the summary of Gallagher's study of "Teacher Variation in Concept Presentation in BSCS Curriculum Program." In addition to identifying topics and themes along three dimensions---intent, level of conceptualization, and style of thinking---the Topic Classification System identifies topic initators and topic terminators.)

3. The Topic Classification System was then applied to three different sets of classroom data:
   a. 50 PTP scripts (Productive Thinking Project).
   b. 18 BSCS scripts (Behavioral Science Curriculum Survey).
   c. 30 videotape scripts.

4. In the 50 PTP scripts, students were dichotomized into two groups---the active and the passive students---which were then compared on the following test variables:
   a. Verbal IQ.
   b. Non-verbal IQ.
   c. Divergent and convergent thinking.
   d. Cognitive and social teacher-ratings.
   e. Chronological age.
   f. Self-concept.

5. For the BSCS scripts, the project staff compared and analyzed teacher variation in presentation of the BSCS textbook material.

Results B. The data are processed. Final report to be released in fall, 1968.

C. TEACHER VARIATION IN CONCEPT PRESENTATION IN BSCS CURRICULUM PROGRAM

James J. Gallagher
Supported by the Regents of the University of Colorado

Problem C. The purpose of this experiment was to control some of the variables involved in student outcome in an effort to help define further the teaching process through direct observation and analysis of interactions of ideas as shown in a series of BSCS biology classes for superior students.

Procedure C. Six biology teachers and their classes of high ability students were recorded three consecutive days as they studied the subject of photosynthesis using BSCS Curriculum material. The observer who took notes, listened to the tape recordings and made additional comments from his own notes for the final tapescript. The Topic Classification System was used to analyze the final transcript.

The Topic Classification System allows the investigator to analyze topics and themes presented in the classroom. A topic is a unit where the focus of discussion centers on a given action, concept, or principle. A series of topics encompassed under a larger heading is called a theme. There are from 15 to 25 topics and from 1 to 5 themes per session. The purpose of this system is to indicate the emphasis of the instructor on three dimensions. The first dimension is Intent, including content and skills. The second dimension is the Level of Conceptualization, divided into three general abstract levels: Data, Concept, and Generalization. The third dimension is the Style of thinking or how information is being processed.

Two judges independently rated each script, first making topic divisions and then classifying. These judges condensed their decisions.

Results C.

Teacher performance:

(1) In general, there was significant variation between the six classes on two dimensions: (a) variation in the frequency of focus on content and skills, and (b) variation in the level of conceptual abstraction attained.

(2) A common pattern in teacher style showed great emphasis on defining and describing aspects of a concept or event and on explanation.

Student performance:

(1) There was a consistent tendency for the teacher to speak from three to four times as much as a student.

(2) The most expressive students compared with the least expressive students on measures of aptitude performance, on the BSCS test, on the teacher-made test covering the unit, and from the final grades, showed more ability or aptitude.

(3) There was no difference in ability between boys and girls but girls did not feel as free as boys to communicate ideas openly in classroom discussion.

Discussion. In the dimensions of Intent and Levels, the diversity of approach suggests that the individual teacher has substantial impact on what and how ideas and concepts are presented, regardless of how the materials are formally organized and presented. Careful self-analysis of one's own performance, using such tools as the Topic Classification System, provides the medium through which instructional strategies can be effectively modified and through which goals can be systematically attained. In this way, teachers can plan the kinds of topics they wish to teach, the style in which they wish to present them, and the level of abstraction at which they expect the work to occur.

LEARNING DISABILITIES

A. THE REVISION OF THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES

Samuel A. Kirk and Winifred D. Kirk
Supported by the University of Illinois Press and Joseph P. Kennedy Foundation

Problem A. The Illinois Test of Psycholinguistic Abilities (ITPA) was published as an experimental edition in 1961. This experimental edition has been used extensively in English-speaking countries for clinical work as well as research. Over 70 different projects have been generated as a result of this development. The research has pointed out assets as well as weaknesses of the experimental edition.

Procedure A. The revision of the ITPA consisted of (a) studies on the reliability of the items of the nine experimental subtests, (b) a refinement of each subtest to include more valid items, (c) an extension of the test to twelve instead of nine subtests, and (d) a series of probes with these new subtests on approximately 500 children. (Each subtest required two to three field tests with children.) After statistical analysis of each item for the twelve subtests, the twelve subtests were standardized on approximately 1,000 "psycholinguistically" average children, ages 2-1/2 to 10. These children lived in the Illinois towns of Danville, Decatur, Bloomington, Urbana, and Champaign; and Madison, Wisconsin.

Results A. The revised edition of the ITPA is now at the University of Illinois Press. It is scheduled for distribution in the fall, 1968. The monograph on the development, construction and standardization of the tests will be prepared by John Paraskevopoulos and Samuel A. Kirk in 1968, when all statistical characteristics have been analyzed.

B. LEARNING DISABILITIES RESEARCH PROJECT

Alexander Bannatyne
Supported by the National Institute of Mental Health

Problem B. Learning disability investigations - individual cases.

Procedure B1. Individual children with learning disabilities will be examined thoroughly by a team of multi-disciplinary investigators with each case reported separately.

Procedure B2. A "field research" is underway to examine the statistical links between the ITPA, spelling ability and various sensori-motor tests in a sample of third grade children. This group will include some learning disability children.

Results B. Study in process. Results available in the spring, 1968.

C. CHILDREN'S KNOWLEDGE OF CONSTRAINTS UPON ORDER OF ATTRIBUTES IN ENGLISH

Margaret A. Scheffelin
Supported by the Institute for Research on Exceptional Children

Problem C. Investigate children's knowledge of the implicit syntactical rules of English governing order of attributes.

Procedure C. Two values of three attributes - size, color, and material - were chosen and eight blocks were generated. The attributes were permuted into six different orders. Each of the eight blocks was described in all six orders, for a total of 48 instructions such as "Find the wooden big blue block." Latency was measured for each motor response of picking up the block described in the instruction. Before and after subject performed the motor responses, he was asked to label the eight blocks.

Results C. The boys chose faster to the sequence "Color-Size-Material" while the girls chose faster to the sequence "Size-Color-Material," which is the most common sequence in English. In the first labeling tasks, subjects said a "a block, a red block," etc. No subject gave more than one attribute spontaneously. After hearing the attributes in all six possible orders, subjects gave an average of 2.3 attributes, with 93% of the multi-attribute responses in the accepted English syntactical sequence "size - color - material."

D. CHILDREN'S SOUND-BLENDING AS A FUNCTION OF NUMBER OF DIVISIONS AND TEMPORAL INTERVALS

Margaret A. Scheffelin and Thomas Shriner
Supported by the Children's Research Center, and the Institute for Research on Exceptional Children

Problem D. To investigate the effects on children's sound-blending of the number of divisions in words and of intervals between the separated sounds.

Procedure D. 150 children, 50 from kindergarten, second and fourth grades will be given a randomized list of 18 one-syllable English words. Nine words will be separated into two sounds (f-oot) and nine words will be separated into three sounds (m - a - n). Five temporal intervals will be used: 1/4, 1/2, 3/4, one second and two seconds. Ten children from each grade will hear each interval.

Results D. Study in progress. Final report available spring, 1968.

E. RESEARCH ON DIAGNOSIS AND REMEDIATION OF MINIMAL BRAIN DYSFUNCTION CHILDREN

James C. Chalfant
Supported by The National Institute of Neurological Diseases and Blindness

Problem E..

1. To review the research literature and assemble information concerning the etiology, the diagnosis, and the remediation of children with minimal brain dysfunction, (MBD).

2. To identify gaps in research and indicate the directions for future research.

Procedure E. Steps to be taken to explore the field of research pertinent to the diagnosis and remediation of children with MBD.

1. Consult with specialists in various fields of research pertaining to MBD.
2. Scan the literature to identify significant studies undertaken.
3. Make visits to various centers where research is being conducted.
4. Gather information and research data and/or case histories on the status of research.
5. Prepare and submit narrative reports on findings.

Results E. Study in progress. Results obtained to date include:
(1) Research has been reviewed.
(2) Chapters have been written on, (a) arithmetic and mathematics, (b) visual perception, and (c) writing.
(3) Investigator in process of writing additional chapters.

F. INTER-RATER RELIABILITY ON A CHECKLIST FOR EXAMINER COMPETENCE

Margaret A. Scheffelin and Janis Wetherell
Supported by the Department of Special Education

Problem F. Develop an efficient procedure for training psychological examiners.

Procedure F.

1. Develop a checklist of desirable observable behavior of psychological examiners.

2. Use the checklist in training and observing student examiners.
3. Compare the ratings of several raters.

Results F. Study is in progress.

MENTAL RETARDATION

A. THE TRAINING OF PSYCHOLINGUISTIC FUNCTIONS WITH THE MENTALLY RETARDED

Douglas Wiseman
Supported by The Joseph P. Kennedy, Jr. Foundation

Problem A. The purpose of this study was to determine the efficacy of specific remediation on the psycholinguistic abilities of mentally retarded boys and to provide the answers to the following questions:

1. To what extent will performance in psycholinguistic abilities be modified by remediation?

2. To what extent will non-disability areas be influenced by the remediation in disability areas?

3. What influence will special treatment have on other cognitive or perceptual abilities?
   a. Will intelligence test performance be affected?
   b. Will perceptual and sensori-motor test performance be altered?

Procedure A. This study was conducted at the Joseph P. Kennedy, Jr. School for mentally retarded boys. The ITPA program was administered to two groups of boys: a younger group (Group A), CA 5-5 to 10-11, mean CA 8, and an older group (Group B), CA 8-5 to 16-10, mean CA 12. A total of 91 boys participated in a three-year program, beginning in the Fall, 1964, aimed at remediating their psycholinguistic disabilities identified by the initial ITPA test. Pretest data for Group A were obtained on the experimental edition of the ITPA and on the Stanford-Binet. Posttest data were obtained on an additional test----Metropolitan Achievement Test in reading, arithmetic, and spelling. Pretest and posttest data were obtained on all three tests for Group B.

Until January, 1965, because of the need of inservice teacher training, the program was primarily developmental in character. For the remainder of the program until the testing in the Spring, 1967, the program was remedial.

Results A. (Pretests, 1964; Posttest, 1967)

1. Group A: On the ITPA, the younger boys (N=33) made a mean gain in total language age of 13.9 months from an average of 56.9 to an average of 70.8 months. On the Stanford-Binet, the mean IQ dropped 1.6 points, from 59.6 to 58.0. In achievement, assuming that the group started at grade level 1, (since they were too young to take the pretest), the mean group gain was slightly less than 1 grade level in reading and arithmetic.

2. Group B: On the ITPA, the older boys (N=59), made a mean gain of 15.3 months from 91.5 to 96.9 months. The mean IQ score dropped 1.0 point, from 66.2 to 65.2. In reading and arithmetic, the mean gain was slightly more than 1 grade level placing the group at the lower third grade level.

3. For the younger children, those making the greatest gains in IQ during the three-year period, also made the greatest gains in total language age and reading achievement. These same children were also the youngest in the group. Those dropping the most in IQ scores also showed minimal growth and made the least progress in achievement. These children were among the oldest in this group.

4. Significantly greater growth was made by children in their disability areas than in their ability areas. Disability or ability areas were defined as any subtest language score which was 18 or more months deviant from total language age. For Group A, a mean of 19.0 months were gained in disability areas, 0.3 in ability areas; for Group B, a mean of 25.7 months were gained in disability areas, 0.8 months dropped in ability areas.

B. A SCHOOL PROGRAM FOR YOUNG MONGOLOID CHILDREN: A CURRICULUM DEVELOPMENT PROJECT

James C. Chalfant
Supported by U. S. Office of Education

Problem B. The purpose of this study is to develop an integrated training program for children with Down's Syndrome. This program is based on their observed assets and deficits. It is proposed that the program consist of (a) an intensive program of behavior shaping related to self-help skills such as eating, toilet training and dressing, (b) a systematically developed program of cognitive and language training including perception, association and expression, and (c) the use of recreational activities to assist in the development of language, motor and social skills.

Procedure B. During the first year of the project, 20 children with Down's Syndrome will be selected for study from the state residential institutions. Of these, ten experimental subjects will be admitted to one ward of the Adler Zone Center in Champaign, Illinois. The remaining ten children will comprise a contrast group for comparative purposes and continue to reside in the residential institutions. The departments of special education, speech correction, recreation, and psychology will develop a comprehensive habit training and school program for young Down's Syndrome children.

The curriculum and methods developed during the first year will be applied to a new experimental group during the second year of the study. A contrast group of ten children will be selected from day schools. The progress of the control and contrast groups will be evaluated and compared at the conclusion of the first year and at the conclusion of the project.

Results B. Study is in progres, ending August, 1969.

C. A STUDY OF THE EFFECTS OF TWO EXPERIMENTAL CURRICULUM UNITS ON THE SOCIAL PERCEPTION AND OCCUPATIONAL READINESS OF EDUCABLE MENTALLY RETARDED ADOLESCENTS

Gary M. Clark
Supported by U. S. Office of Education, conducted in conjunction with Peabody Teacher's College, but completed while the investigator was at the Institute for Research on Exceptional Children

Problem C. To investigate the effectiveness of an experimental curriculum unit on the perceptual training for social behavior in retarded adolescents.

Procedure C. Fifty-six pupils from three schools were randomly assigned to experimental or placebo groups within each school. Teachers of the six classes were randomly assigned to teach an experimental or placebo class at their schools. The experimental class used the experimental curriculum unit, Perceptual Training for Community Living: A Pre-Vocational Unit for Retarded Youth (Edmonson, Leach, and Leland, 1965). The placebo classes followed guidelines devised by the investigator which provided for some manipulation of the placebo group environment without alteration of the regular curriculum content. All pupils were pretested and posttested with the following measures: Vineland Social Maturity Scale, Fudell Test of Occupational Readiness, Test of Social Inference, Bown Self-Report Inventory, Behavior Rating Scale by Teachers. Other data obtained include weekly unit tests, and teacher and pupil evaluations of the experimental perceptual training unit for social behavior. The data was analyzed by analysis of variance, analysis of co-variance, and correlation procedures.

Results C. Analyses of the data were made to determine the differences between treatment groups by (1) analyses of variance of attained scores on all measure, and (2) analyses of variance of scores adjusted for chronological age, sex, and IQ. Both types of analyses yielded the same results; (a) no difference between pretest and posttest on four dependent variables (Vineland, Bown Self-Report Inventory, and the Behavior Ratings by Observers and Teachers) and (b) significant differences on three variables (Fudell Test of Occupational Readiness, Test of Social Inference, and error score on the Test of Social Inference). Analyses indicated (c) no significant differences between experimental and placebo groups on any of the dependent variables. A post hoc analysis of co-variance of sex effects indicated that sex influenced performance significantly on the Fudell Test of Occupational Readiness, the Test of Social Inference error score, and the two behavior ratings. Multiple correlation procedures of the posttest scores for the experimental group revealed significant correlations between the achievement scores on the weekly unit tests and the Fudell Test of Occupational Readiness and Behavior Rating Scale by Teachers. Teacher and pupil evaluations were generally very favorable regarding the interest level, comprehension level, and the appropriateness of this unit. Ratings of daily units by teachers and pupils and narrative evaluations by teachers provided gross indications of weak areas in the unit.

D. PARENTAL TEACHING OF THE EDUCABLE MENTALLY RETARDED CHILD AS RELATED TO SCHOOL ACHIEVEMENT

Dorothea Rau and Bernard Farber
Supported by U. S. Office of Education

Problem D. The specific objective of this study was to identify forms of parental interaction with the EMR child which would be relevently related to the child's achievement in school.

Procedure D. The subjects were fathers and mothers of 36 Caucasian EMR children (CA 9-0 to 12-11, IQ 55-75) who had been attending special education classes for at least two years. Achievement was defined in terms of the relative discrepancy between expected school achievement on the basis of the Horn formula and the obtained score on the Metropolitan School Achievement Test. The children were divided into two groups---the high and low achievers---which were subdivided into higher and lower socioeconomic groups.

In an open-ended interview each parent described his activities with the EMR child. The responses were analyzed by means of content analysis using theme categories.

In addition to the above procedures, each mother was directly observed as she attempted to teach specified Block Designs and tasks of General Information from the WISC. Taperecordings were scrutinized word-by-word and sorted according to 19 different teaching techniques.

Results D. A general summary of the most significant results include:
(1) During the Parent Interview, the fathers of the high achieving EMR subjects mentioned frequently personalized routines of interaction with the child, such as greeting, loving, sitting close to, talking informally, or listening to him. During the Parent Test, the mothers of these children exercised comparatively little verbal control over the child.

(2) The fathers of the low achieving EMR children remarked infrequently about their social emotional dealings with the child. But in the Parent Test, the mothers imposed on the child numerous explanations, questions, repeated items, irrelevant words. They appealed to the child through personalized pronouns and names, and through words of praise.

Discussion D. Social emotional dealings may be considered as patterns of informal interaction with the child, while actual attempts of teaching a child a particular task represents a formal approach of interaction with the child. The investigation showed that the fathers of low achieving EMR children were comparatively lax in their informal attempts to interact with the child, but the mothers were very insistent in their formal approach. Their extensive use of verbalizations to teach the child seemed to indicate a verbal overprotection of the child, leaving little room for the child to achieve on his own.

E. LINGUISTIC ANALYSIS OF VERBAL INTERACTION IN SPECIAL CLASSES FOR THE MENTALLY RETARDED

Oliver L. Harley
Supported by U. S. Office of Education

Problem E. This study is the first part of a projected three phase program:

Phase I. Develop a reliable method of analyzing and comparing the linguistic codes of teacher and pupils in classroom interaction.

Phase II. Use this method to analyze and describe the relationships between teacher and pupil language codes in the EMH classes.

Phase III. Develop materials for the teaching of the necessary language structure to the EMH classes and train teachers in the techniques developed to overcome the language code differences.

Procedure E. Two tapescripts of EMH classes provided raw data for development of a coding system. There were a total of 19 children in both classes. The tapescripts were used to develop a means of coding, analyzing, and comparing verbal outputs of teacher and pupils. The teacher's language was analyzed to determine whether it focused (a) on justifying behavior and emphasizing consequences or (b) on rote learning and the acceptance of the status quo.

The basic procedure was one of trying out different methods of analysis and applying them to three criteria:

1. The system should reflect the complexity and structure of phrases and sentences.
2. The system should be applicable to both teacher and pupil language.
3. The system should be uncomplicated enough to be used by a teacher herself.

Results E. The resulting Linguistic Coding System has three parts:

(1) The Length and Complexity Index which simultaneously weighs the length of a sentence and the complexity of its noun and verb phrases.

(2) The Sentence Classification Scheme which classifies sentences into one of five classes: simple sentences, simple sentences with a phrase, elaborated simple sentence, compound and complex sentences, elaborated compound and complex sentences.

(3) A Content Analysis which was coded according to the purpose of the communication.

F. COMPARISON OF FOUR STIMULUS - RESPONSE CHANNELS IN PAIRED-ASSOCIATE LEARNING WITH TRAINABLE RETARDED CHILDREN

Margaret A. Scheffelin
Supported by the Institute for Research on Exceptional Children

Problem F. Investigate the effect of visual-motor, visual-vocal, auditory-motor, and auditory-vocal channels in paired-associate learning.

Procedure F. The methodology developed for a previous experiment (Scheffelin, 1967) was used. The subjects were 24 children from day classes for the trainable mentally retarded, who had not been diagnosed as having Down's Syndrome.

Results F. Study in progress. Results available in the spring, 1968.

G. SHORT-TERM MEMORY IN RETARDED CHILDREN

Keith G. Scott
Supported by National Institute of Mental Health program grant and a research grant from the National Institute of Child Health and Human Development

Problem G. To investigate the correlates of the development of short-term memory in retarded children. The aim is to describe cause or causes of the rapid forgetting they display.

Procedure G. Two major procedures are used; one for visual stimuli, and the other for auditory stimuli. The visual stimuli are presented by automated visual display apparatus with candy or tokens as rewards. The auditory stimuli are presented by a stereophonic tape recorder using earphones. The research has been conducted using three major facilities; a laboratory at the Lincoln State School in Lincoln, Illinois, a mobile laboratory in a specially built small house trailer, and in laboratory space at the Children's Research Center.

Results G. Proactive interference has been shown to be a major cause of forgetting with retarded children. The time cause of this process has been investigated and the separate effects of learning and recalling an item are currently being explored as they relate to forgetting.

The relation of memory span and mental age have been determined using auditory stimuli. These data also shows the effects of competition from material presented dichotically. Further research is focusing on methods of controlling the children's behavior in this situation.

H. THE REINFORCING PROPERTIES OF PREDICTIVE INFORMATION

Warren M. Steinman
Supported by the Institute for Research on Exceptional Children and the Children's Research Center

Problem H.. To study the child's tendency to be reinforced by the attainment of information.

Procedure H. Normal and retarded children are placed in a two-choice situation. The probability of reinforcement for performing either of these responses is then manipulated. One of the choices produced stimuli which are correlated with the reinforcement outcome. That is, should a particular trial be a reinforcement trial one stimulus (S_1) is presented, however, should another stimulus be presented (S_2) reinforcement is not delivered. The other response also produces two stimuli, however, neither of these are correlated with the delivery of reinforcement. Thus, the first response produces information as well as the possibility of reinforcement; whereas the second response produces the possibility of reinforcement but no reliable information. The experiment assesses the child's tendency to be reinforced by the attainment of information. Also, should the child not select the information-providing source, the probability of reinforcement for each choice is manipulated until the information seeking behavior is emitted.

Results H. Study in progress.

I. A FACTOR ANALYSIS OF THE EXPERIMENTAL FORM OF THE TEST OF SOCIAL INFERENCE

Gary M. Clark and John Paraskevopoulos

Problem I. The problem involved in this study is to investigate concurrent validity of the experimental form of the Test of Social Inference. The test has been used in several experimental studies and shows some promise for providing information regarding social intelligence and the skills of social inference and perception.

Procedure I. The procedure for validating this test on concurrent instruments will be to factor analyze this instrument for factor loadings with the Vineland Social Maturity Scale, Bown Self-Report Inventory, and the Fudell Test of Occupational Readiness. Data is available from a previous study involving the use of these instruments in a pre-post efficacy study of a curriculum unit for social perception and inference.

Results I. Study in progress.

J. THE DEVELOPMENT OF A TEST OF MOTOR IMPAIRMENT FOR MENTALLY RETARDED CHILDREN

Alan Balter
Supported by U. S. Office of Education

Problem J. To develop an instrument for assessing motor skills in mentally retarded children.

Procedure J. Pilot study identified broad categories of daily living which are critical to a child's everyday experience and which demand satisfactory levels of motor skill for successful performance. From this list of critical operations, self-help activities, namely, eating, dressing, and personal hygiene were selected for intensive observation in a natural setting. The movement behavior of three children participating in self-help activities was recorded on film using hidden camera techniques. Detailed analyses of these films were conducted which led to the development of a test rationale stating that the test must measure a subject's capacity for precise manipulation of objects in his immediate environment while depending primarily on simultaneous and coordinated movements of parts of both upper limbs. Subtests measuring three motor skills - upper limb positioning, grasping, and finger dexterity - were devised and administered to a sample of 60 normal boys between four and ten years of age. Test validity was measured by means of rating the self-help activity of five subjects who scored low on the test and five subjects who scored high on the test.

Results J. Findings of initial test administration indicated that the time required for testing, the equipment designed for use with the subtests, and the test instructions were satisfactory. Investigation of the difficulty level of the test suggested that the test may be appropriately difficult to identify the small percentage of children who are impaired in the self-help skills. Correlations between test performance and chronological age suggest that the test in its present form is most appropriate for administration to normal children younger than seven years of age although an older child may be tested if impairment is suspected. Validity study indicated a strong relationship between self-help ratings and performance on the test.

K. OBJECTIVE MEASUREMENT OF EXTERNAL BODILY FEATURES

Robert E. Herron and H. Karara
Supported by the Illinois State Department of Mental Health

Problem K. The quantification of body shape and size of mentally retarded and normal children aged from six to twelve years, to obtain information about the growth development process in general. The following criteria were established: The method should (1) require minimal subject cooperation; (2) be innocuous; (3) be quick; (4) be parsimonious in the acquisition of relevant data; (5) yield as accurate, reliable and complete information as possible.

Procedure K. Since none of the conventional methods seemed to fulfill these requirements, it was decided to explore the possibilities of a stereophotogrammetric approach. In a preliminary study, two sterometric cameras were used and the subject was photographed stereoscopically from front and back, simultaneously. This method, with slight modifications, will be used to examine growth changes over a period of three years in populations of retarded and normal children.

Results K. Results of the pilot study and a description of the method were reported in: Herron, R. E., Weissman, S., & Karara, H. M. A method of stereophotographic anthoropometry for mentally handicapped children. Digest of the 7th International Conference on Medical and Biological Engineering, Stockholm, August 1967.

L. PHENYLKETONURIA IN SCHOOL AGED RETARDED CHILDREN

Robert Henderson, Malcolm Williamson, and Richard Koch
Supported by National Institute of Mental Health to California Agency

Problem L. This study was conducted to fulfill the following purposes: (a) to identify the undetected cases of phenylketonuria among the mentally retarded population of school age children in California; (b) to develop and test the materials and methodology for such a demonstration project and to make such information available to others for use in similar statewide surveys; (c) to analyze collected data to increase knowledge concerning prevalence of PKU, and, (d) to detect new cases of PKU in siblings of the index cases so that parents and physicians could be alerted to institute dietary therapy as indicated.

Procedure L. Individual screening projects were organized on a country-wide basis in cooperation with public schools, local health departments, private institutions licensed through the California State Department of Mental Hygiene, and parent organizations. From these agencies 37,151 children were approved for screening by parents and administrators. Public school and public health nurses performed screening in accordance with procedures established by the project headquarters. Screening methods were limited to those that test for the presence of phenylpyruvic acid in urine, namely, Phenistix (an Ames Co. product) and a ferric chloride reagent. Follow-up was by either the dinitrophenylhydrosine (DNPH) test or Berry's urine chromatographic method. Confirmation of PKU was made by private physicians or the public health agency in children whose screening and follow-up tests were positive and whose serum phenylalanine levels were above 10 mgm per 100 ml. A specially designed kit supplied the nurses with the testing materials. Screening projects were carried out in five phases: (1) project approval phase; (2) organizational phase; (3) educational and informational phase; (4) testing phase; and (5) follow-up phase. The major administrative responsibilities within each county were assigned to a county project coordinator. At an organizational meeting the project director demonstrated the testing procedures and described the materials. Parents were informed of the program and were given an opportunity to refuse the testing of their child. They also were notified of the results of the screening.

Results L. Of the number of children available for screening 32,818, or 88.3 per cent, actually were tested. Parent refusals, absenteeism, and inability to void were the important explanations for failure to test 11.7 per cent of the available children. The percentages screened were comparable for children in educable mentally retarded, trainable mentally retarded and physically handicapped classes or groups. Proportionately more younger than older children were screened with the highest percentage, 91.1 per cent at the intermediate grade level, and the lowest, 81.5 per cent at the senior high level. The most successful follow-up procedure was urine chromatography. The ratio of PKU's identified decreased as the intelligence level of the group increased. For example, among the trainable retarded the number of PKU's/number tested was 34/5,872 (ratio 1:175); and among the educable retarded it was 30/25,240 (ratio 1:840). Four young PKU siblings were not included in these calculations. The project successfully demonstrated the procedure by which untreated PKU individuals in the community may be identified with minimal difficulty.

RELATED CHILD DEVELOPMENT RESEARCH

A. BIO-BEHAVIORAL STUDIES OF CHILDREN'S PLAY

Staff of the Motor Performance Laboratory, (Director, Robert E. Herron)
Children's Research Center
Supported by the National Institute of Mental Health, U. S. Public Health Service

Problem A. There is relatively little systematic experimental research concerning the bio-behavioral aspects of children's play, especially play of a gross motor kind. Furthermore, a versatile taxonomy for the purpose of analysing experimental and naturalistic play is lacking.

Procedure A. A series of studies will be undertaken to develop and apply systematic recording and analysis of children's play in controlled, semi-controlled, and naturalistic play situations. Methodologies will be developed on the basis of current techniques in ethology, psychology, sociology and related areas.

Results A. Study in progress. Early findings will be reported in 1968.

B. ANALYSIS OF CHILDREN'S ACTIVITY PATTERNS

Robert E. Herron and William P. Hurder
Supported by the Illinois State Department of Mental Health

Problem B. To design and implement a system for the measurement and analysis of activity patterns in children over extended periods. This requires a method which is unobtrusive and involves minimal cooperation on the child's part.

Procedure B. Initially, the study will focus on remote monitoring of gross body movement by radio telemetry with an emphasis on transducer design. Miniature transmitter-transducer modules will be evaluated and constructed.

Results B. Details of preliminary findings have been reported in: Herron, R. E., & Ramsden, R. W. Continuous monitoring of overt human body movement by radio telemetry: a brief review. Perceptual and Motor Skills, 1967, 24, 1303-1308. Herron, R. E., & Ramsden, R. W. A telepedometer for the remote measurement of human locomotor activity. Psychophysiology, 1967, 4(1), 112-115.

C. THE DEVELOPMENT OF EFFECTIVE, DURABLE, AND SITUATIONALLY INDEPENDENT CONDITIONED REINFORCERS

Warren M. Steinman
Supported by the Institute for Research on Exceptional Children, and the Children's Research Center

Problem C. To investigate specific kinds of reinforcement variety and their effect upon the behavior of children and the conditioned reinforcing properties obtained by a stimulus paired with varied reinforcement.

Procedure C. Being developed.

Results C. Study in the process of development.

Doctoral Dissertations

supported by

The Institute for Research on Exceptional Children

1. Johnson, G. O. A study of the social position of mentally handicapped children in regular grades. Unpublished doctoral (Ed.D.) dissertation, 1950.

2. Dunn, L. M. C. A comparative study of mentally retarded and mentally normal boys of the same mental age on some aspects of the reading process. Unpublished doctoral (Ph.D.) dissertation, 1953.

3. McNeill, W. D. D. Developmental patterns of mongoloid children: a study of certain aspects of their growth and development. Unpublished doctoral (Ph.D.) dissertation, 1954.

4. Capiobianco, R. J. A comparative study of endogenous and exogenous mentally handicapped boys in arithmetic achievement. Unpublished doctoral (Ed.D.) dissertation, 1954.

5. Shere, Maria O. An evaluation of the social and emotional development of the cerebral palsied twin. Unpublished doctoral (Ph.D.) dissertation, 1954.

6. Wirtz, Morvin A. An exploratory study of a parent-sponsored day school for severely mentally retarded children. Unpublished doctoral (Ed.D.) dissertation, 1954.

7. Sievers, Dorothy Jean. Development and standardization of a test of psycholinguistic growth in preschool children. Unpublished doctoral (Ph.D.) dissertation, 1955.

8. Erdman, R. L. Vocational choices of adolescent mentally retarded boys. Unpublished doctoral (Ed.D.) dissertation, 1957.

9. Goldstein, Herbert. Social aspects of mental deficiency. Unpublished doctoral (Ed.D.) dissertation, 1957.

10. Henderson, Robert A. Factors in commitment of educable mentally handicapped to Illinois State Schools. Unpublished doctoral (Ed.D.) dissertation, 1957.

11. McCarthy, James J. Qualitative and quantitative differences in the language abilities of young cerebral palsied children. Unpublished doctoral (Ph.D.) dissertation, 1957.

12. Weiner, Bluma. Hawaii's public school program for mentally retarded children. Unpublished doctoral (Ed.D.) dissertation, 1958.

13. Enc, Mitat Ahmet. The effects of different WPM listening rates on learning and retention of blind children. Unpublished doctoral (Ph.D.) dissertation, 1958.

14. Lucito, Leonard J. A comparison of the independence conformity behavior of intellectually bright and dull children. Unpublished doctoral (Ed.D.) dissertation, 1959.

15. Falconer, George. A mechanical device for teaching word recognition to young deaf children. Unpublished doctoral (Ed.D.) dissertation, 1959.

16. Jordan, June B. Intelligence as a factor in social position: a sociometric study in special classes for the mentally handicapped. Unpublished doctoral (Ed.D.) dissertation, 1960.

17. Olson, James Ladd. A comparison of sensory aphasia, expressive aphasia and deaf children on the Illinois Test of Language Ability. Unpublished doctoral (Ed.D.) dissertation, 1960.

18. Ashcroft, Samuel C. Errors in oral reading of Braille at elementary grade levels. Unpublished doctoral (Ed.D.) dissertation, 1960.

19. Jordan, Laura J. The efficacy of a reading readiness program with the educable mentally retarded. Unpublished doctoral (Ph.D.) dissertation, 1961.

20. Frey, Robert M. The reading behavior of public school brain injured and non-injured children of average and retarded mental development. Unpublished doctoral (Ed.D.) dissertation, 1961.

21. Tisdall, William. The efficacy of a special class program on the productive thinking abilities of educable mentally retarded children. Unpublished doctoral (Ph.D.) dissertation, 1962.

22. Bateman, Barbara D. Reading and psycholinguistic processes of partially sighted children. Unpublished doctoral (Ph.D.) dissertation, 1962.

23. Kass, Corrine E. Some psychological correlates of severe reading disability (dyslexia). Unpublished doctoral (Ph.D.) dissertation, 1962.

24. Smith, Robert. Perceptions of self, others, and certain environmental aspects of high and low divergent, intellectually superior children. Unpublished doctoral (Ed.D.) dissertation, 1962.

25. Spencer, Elizabeth. Morale factors among teachers of the mentally retarded. Unpublished doctoral (Ed.D.) dissertation, 1962.

26. Renz, Paul. Differential stimuli in concept formation of the educable mentally handicapped. Unpublished doctoral (Ph.D.) dissertation, 1962.

27. Billingsley, James. The effect of status and role on independence--conformity of behavior of mentally retarded boys. Unpublished doctoral (Ed.D.) dissertation, 1963.

28. Ferrier, Elmer E. An investigation of psycholinguistic factors associated with functional defects of articulation. Unpublished doctoral (Ph.D.) dissertation, 1963.

29. Hasterok, Gerald. The learning performance of retarded children with visual and auditory sense modality disabilities. Unpublished doctoral (Ph.D.) dissertation, 1964.

30. Brabner, George, Jr. An Hebbian approach to the study of the visual perception of deaf children. Unpublished doctoral (Ph.D.) dissertation, 1964.

31. Fuchigami, Robert Y. An investigation of the extent of integration and some related factors affecting the social relationships of educable mentally handicapped children in Illinois. Unpublished doctoral (Ed.D.) dissertation, 1964.

32. Chalfant, James C. Factors related to special education services in Illinois. Unpublished doctoral (Ed.D.) dissertation, 1965.

33. McCarthy, Jeanne M. Patterns of psycholinguistic development of mongoloid and non-mongoloid severely retarded children. Unpublished doctoral (Ph.D.) dissertation, 1965.

34. Sheperd, George. The selected factors in the reading ability of educable mentally retarded boys. Unpublished doctoral (Ed.D.) dissertation, 1965.

35. Hahn, Hans Raymond. The influence of regular class and special class placement on the reaction to verbal reinforcement and success expectancy of children with low intelligence. Unpublished doctoral (Ed.D.) dissertation, 1965.

36. Frederick, Harriett Elizabeth. The meaning of abstract concepts of deaf and hearing children. Unpublished doctoral (Ph.D.) dissertation, 1965.

37. Wiseman, Douglas E. The effects of an individualized remedial program on mentally retarded children with psycholinguistic disabilities. Unpublished doctoral (Ed.D.) dissertation, 1965.

38. Hurley, Oliver Leon. The interrelationships of intersensory integration, visual sequential memory, spatial ability, and reading ability in second and third graders. Unpublished doctoral (Ph.D.) dissertation, 1965.

39. Ryckman, David Bertrand. Psychological processes of disadvantaged children. Unpublished doctoral (Ed.D.) dissertation, 1966.

40. Kliebhan, Sister Joanne Marie. The effects of goal-setting and modeling on the performance of retarded adolescents in an occupational workshop. Unpublished doctoral (Ph.D.) dissertation, 1966.

41. Jones, Philip Robert. The relationship of vocational outlook and special educational programs for adolescent educable mentally handicapped. Unpublished doctoral (Ed.D.) dissertation, 1966.

42. Mackinnon, Fred. The relationship of perceived patterns of parent-child making to divergent thinking ability in gifted children. Unpublished doctoral (Ed.D.) dissertation, 1966.

43. Shaffer, Faye. The categorization of student inquires and the responses made within the context of classroom interaction. Unpublished doctoral (Ed.D.) dissertation, 1966.

44. Paraskevopoulos, Ioannis Nikolaos. Symmetry: Its effects on recall, preference and discrimination of visual patterns in relation to age and intelligence. Unpublished doctoral (Ph.D.) dissertation, 1967.

45. Rau, Dorothea N. Parental teaching of the educable mentally retarded child as related to school achievement. Unpublished doctoral (Ph.D.) dissertation, 1967.

46. Hirshoren, Alfred. The prognostic and diagnostic utility and the stability of the Illinois Test of Psycholinguistic Abilities. Unpublished doctoral (Ed.D.) dissertation, 1967.

47. Moores, Donald Frederick. Applications of "Cloze" procedures to the assessment of psycholinguistic abilities of the deaf. Unpublished doctoral (Ed.D.) dissertation, 1967.

48. Scheffelin, Margaret. Comparison of stimulus--response modalities in paired-associate learning by Down's Syndrome children. Unpublished doctoral (Ph.D.) dissertation, 1967.

49. Brown, Donald Watkins. Operant conditioning of attending and verbal imitation of deaf children with deviant behaviors. Unpublished doctoral (Ph.D.) dissertation, 1967.

50. Painter, Genevieve B. The effect of a tutorial program on the intellectual development of disadvantaged infants. Unpublished doctoral (Ed.D.) dissertation, 1967.

51. Balter, Alan. Development of test of motor-impairment. Unpublished doctoral (Ph.D.) dissertation, 1967.

52. Wyatt, Kenneth. Current employment and possible future needs for leadership personnel in special education. Unpublished doctoral (Ed.D.) dissertation, 1967.

53. Frazee, Vernon F. School and community characteristics related to special educational services in urban communities. Unpublished doctoral (Ed.D) dissertation, 1967.

Doctoral Dissertations in Progress

The following doctoral dissertations were in progress during the year, 1967. All of these dissertations were supported partially by the Institute or Institute staff.

Hasbargen, Arthur. Demographic Characteristics of Institutionalized Emotionally Disturbed Children. Ed.D.

Heiny, Robert. Role Ambiguity: A Case Study in the Professionalization of Special Educators. Ph.D.

Kirk, Girvin. An Inventory of Phonemic Confusions of First Grade Disadvantaged Children. Ed.D.

Shuster, Susan. Comparison of Leadership Styles with Normal and EMH Children. Ph.D.

Sister Maureen. The Effects of a Teacher-Administered Token Reinforcement Therapy Program on the Classroom Behavior of Educable Mentally Retarded Children: Measured by Level of Accuracy and Degree of Disruptive Behavior. Ph.D.

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